Econ 132 Fall 2018 FINAL EXAM (A): SOLUTIONS Cameron

Version A

1.(a) True This was the case consider in assignment 1.

(b) False From course notes it as around $10,800.

(c) False Allocation to insurance policy type was randomized.

(d) False Six was not the optimal number but was still better than none.

(e) True

(f) True As explained in class.

2.(a)(i) Yes. Expected loss = 0.2 x 20,000 + 0.8 × 5,000 = $8,000. This equals the premium. **(ii)** Individual variance = $0.2 \times (20{,}000 - 8{,}000)^2 + 0.8 \times (5{,}000 - 8{,}000)^2$
$= 0.2 \times 144{,}000{,}000 + 0.8 \times 9{,}000{,}000 = 36{,}000{,}000.$
(ii) Variance of group average loss = 36,000,000/100 = 360,000.
Standard deviation of average loss = sqrt(3,600) = $600.
With probability .95 within two stand. deviations of mean = 8,000 ± 2x600 = (6,800, 9,200).

(b) $T = [0.44 - 0.30] / \text{sqrt}(0.08^2 + 0.06^2) = 0.14 / 0.10 = 1.40.$
Since $|T| < z_{0.05} = 1.96$ do not reject H_0: $\mu_1 = \mu_2$ in favor of H_A: $\mu_1 \neq \mu_2$.
The difference is not statistically significant at significance level 5%.

(c)(i) As coinsurance rates rise (from 0% up to 95%) health expenditures fall on average.
So consumer responds to higher prices (their coinsurance share) by decreasing demand.
(ii) Elasticity = $\frac{(340 - 224) / [(340 + 224)/2]}{(0 - 50) / [(0 + 50)/2]} = \frac{116/282}{-50/25} = \frac{0.411}{-2} = -0.206.$

3.(a) We move from (Q_100, P_100) to (Q_50, P_50). So …
(i) Change in health expenditure is C + B + F (equals P_100 × (Q_50 – Q_100)).
(ii) Moral hazard loss is C (difference between societal cost (P_100) and maximum willing to pay (given by the demand curve).

(b) Buyers believe uniform on (50,90) given posted price of 90.
Expected value is (90+50)/2 = 70 with utility U(70)=1.2×70=84 < 90. **So do not buy.**

(c)(i) The CEA study included both features in its critique of Medicare for All.

(ii) Because there is a welfare loss in raising taxes to pay for increased government spending on health. (This welfare loss is similar to that due to moral hazard studied in class).

4.(a) Passive vs none: MC per QALY saved = ($40,000-$0)/(4x0.5–2x0.4) = $40,000/1.2 = $33,333.
Aggressive vs none: MC per QALY saved = ($200,000-$0)/(10x0.6–2x0.4) = $200,000/5.2 = $38,500. Prefer passive treatment to aggressive as lower MC per QALY saved.

(b) Cost: 100,000 x $20 + 0.8 x 100 x $200 + 0.1 x 100,000 x $200 = 2,000,000+16,000+2,000,000= $4,016,000 (or could instead have 0.1 x 99,900 x $200 unneeded tests giving $4,014,000 total).
Benefit = 0.8 x 100 x $20,000 = $1,600,000.
The first test is not worthwhile as cost exceeds benefit.

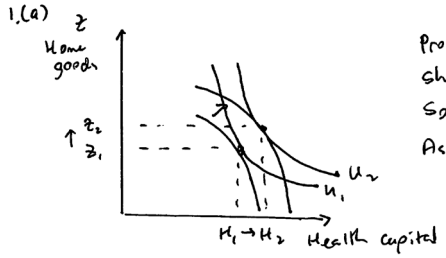
(c)

Team Size	0	5	10	15	20	25
Deaths	120	50	20	10	6	4
Life saved		70	30	10	4	2
Marg. benefit		350,000	150,000	100,000	20,000	10,000
Marg. cost		25,000	25,000	25,000	25,000	25,000

Optimal number is 15 member team as then MB=100,000 still > MC = 25,000.

Version A (continued)

5.(a)



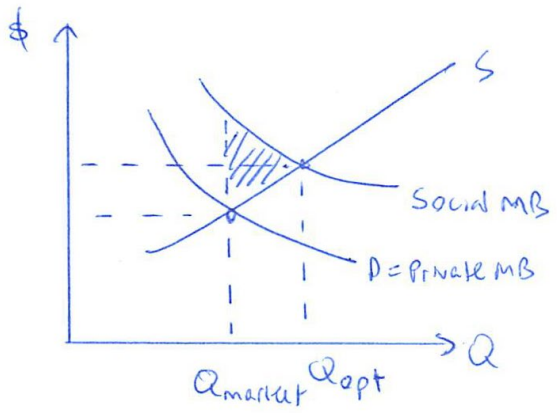
Production possibilities frontier shifts out.
So better off (utility ↑)
As drawn
health capital ↑
home goods ↑ (so health inputs ↓)

(b) Doctor PDV = $-60 + 90/1.2 + 144/(1.2)^2 = -60 + 75 + 100 = 115$.
College only PDV = $30 + 48/1.2 + 72/(1.2)^2 = 30 + 40 + 50 = 120$.
College only as higher discounted present value. (You need to discount to get credit.)

(c) Farmers with treated mosquito nets: Average income gain = 800 – 600 = 200.
Farmers in control group: Average income gain = 750 – 650 = 100.
Difference-in-difference estimate = 200 – 100 = $100.

6.(a)(i) Social MB = 100 million x (1 – 0.2Q) = (100 – 2Q) million. Social MC = 20 million.
Social MB = Social MC implies 100 – 2Q = 20 so Q = 40.
(ii) Various answers are possible, including information, government research funding.

(b) Positive externality of vaccination**.**



Social MB = Private MB + extra
$Q_{market} < Q_{optimum}$
Shaded region gives welfare loss

(c)(i) Negative aspect: introduces monopoly power to holder of the patent.
(ii) Positive aspect: encourages innovation (discovery of new drugs).

Version A (continued)

7.(i) Drug price increases by $158,274 per extra life year gained. (Use first set of output)

(ii) No. p=-.234 > 0 (or |t|=1.20 < 1.96. (Use second set of output)

(iii) Use third set of output which is log-log regression and directly gives the elasticity.
t = (1.082236 – 1.0) /0.1679802 = 0.489 < 1.96. No. it is not statistically significantly different from 1.

(iv) It is increasing by 100x0.0948 = 9.48% per year. ((Use fourth set of output which is log-linear).

(v) This adds variable lncomp which is statistically significant at 5%and has meaningfully very large coefficient. Drug price is much lower when there is competition from other drugs.

(f) regress price placebo (this was **ttest** with equal variances).

Multiple choice

Question	1	b	50% public / 50% private
	2	a	
	3	d	
	4	d	It is .25 x 80 + .75 x 200 = 170.
	5	d	The MB was always > 0 but became < MC
	6	b	
	7	c	Hospitals do exercise market power given concentration in each region
	8	a	Only required for the initial drug
	9	b	Information is a public good. Patents make it excludable.
	10	b	
	11	b	
	12	a	From example for Yolo county Medicare part D plans given in class
	13	b	
	14	a	
	15	c	
	16	a	
	17	c	
	18	c	

Scores out of 60 **Curve (Indication only: Course Grade is based on Total Score!)**

75th percentile	47.5 (79 %)	(Ave GPA 2.76 on this curve)			C+	38 and above
Median	42 (70 %)		A	48 and above	C	36 and above
25th percentile	36.5 (61 %)		A-	46 and above	C-	34 and above
			B+	44 and above	D+	32 and above
			B	42 and above	D	30 and above
			B-	40 and above	D-	28 and above